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New records of Tortricidae (Lepidoptera) from Himachal Pradesh, India

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Abstract

The present manuscript deals with the new state records of five tortricid species from Himachal Pradesh: *Clepsis rurinana* (Linnaeus, 1758), *Lumaria probolias* (Meyrick, 1907), *Bactra furfurana* (Haworth, 1811), *B. venosana* (Zeller, 1847) and *Gibberifera obscura* (Diakonoff, 1964).

Keywords: Diversity, Eucosmini, Himalaya, New Reports, Olethreutinae

Introduction

The family Tortricidae is the only family under superfamily Tortricoidea. This is the largest superfamily after Gelechioidea under clade Apoditrysia (Horak, 2006) and includes over 1,000 genera and nearly 10,000 species (Brown, 2005; Baixeras *et al*., 2010) under three subfamilies viz., Chlidanotinae, Olethreutinae and Tortricinae with 487 species belonging to 168 genera (Chlidanotinae (14 species), Tortricinae (175 species), and Olethreutinae (298 species)) from India (Pathania *et al.,* 2020). These moths are diverse and abundant in tropical, subtropical and temperate forest ecosystems, and are economically significant because many species infest agriculturally important plants (Van Der Geest and Evenhuis, 1991). For example, litchi leaf roller (*Dudua aprobola* Meyrick, 1886), sapota seed borer (*Trymalitis margarias* Meyrick, 1886) and codling moth (*Cydia pomonella* Linnaeus, 1758) are few well-known pests of different crops including stone fruits, pome fruits, guava, mango, tamarind, tea, cereals, pigeonpea, pepper, grasses and some forest trees. Many tortricids have the potential to become model organisms for the study of lepidopteran evolution, genetics and insect pheromones (Roe *et al*., 2009). The present study attempts to update the distribution status of five tortricid species from Himachal Pradesh and discusses on their detailed descriptions and diagnosis with similar congeners including habitus, wing venation and male genitalia illustrations.

Material and Methods

Adult moths were collected with light traps fitted at different localities of Himachal Pradesh (Palampur, Nauni and Berthin) during night time. The collected moths were killed with ethyl acetate vapours in killing jars. The freshly killed specimens were pinned and set on setting boards, and processed as per standard techniques in Lepidopterology (Holloway *et al.,* 2001). Digital camera (Olympus, Camedia, C-7070) attached to Stereo zoom Olympus microscope SZ X 7 used for the photography of adults, labial palpi, wings and genitalia. Wing venation slides were prepared as proposed by Common (1970) and advocated by Zimmerman (1978). The nomenclature of wing venation proposed by Comstock and Needham (1898-99), followed by Richards *et al.* (1957) and modified by Miller (1970). Genitalia slides were prepared following Brown and Powell (1991). The terminologies of Horak (2006) were adapted for genitalia description. The material used in this paper is deposited in the Lepidoptera Section of National PUSA collection, IARI, New Delhi, India.

Results

Systematic Account

Order LEPIDOPTERA
Family TORTRICIDAE

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Subfamily TORTRICINAE
Tribe **Archipini**

Genus ***Clepsis*** Guenee, 1845

1845. *Annls Soc. ent. Fr.* **3**(2): 149.

Clepsis rurinana (Linnaeus, 1758)
(Figures 1, 6, 11, 16)

1789. *Clepsis angulana* Villers, (*Phalaena* (*Tortrix*)), C. Linnaei Ent. Faun. Suec. descr. **2**: 417.

1785. *Clepsis angulosa* "Geoffroy, in Fourcroy", 1785 (*Phalaena*), Cen. Paris. **2**: 304.

1804. *Clepsis avellana* Panzer, (*Pyralis*), Syst. Nomen. Schaeffers: 124.

1919. *Clepsis idana* Kennel, (*Cacoecia*), Mitt. mnch. ent. Ges. **8**: 51.

1936. *Clepsis liotoma* Meyrick, (*Tortrix*), Exotic Microlepid. **5**: 60.

1761. *Clepsis modeeriana* Linnaeus, (*Phalaena* (*Tortrix*)), Fauna Svecica: 347.

1767. *Clepsis moderiana* Linnaeus, (*Phalaena* (*Tortrix*)), Systema Naturae (12th ed.): 880.

1957. *Clepsis obscura* Dufrane, (*Tortrix*), Bull. Inst. R. Sci. Nat. Belg. **33**(32): 7.

1845. *Clepsis semialbana* Guenee, (*Tortrix*), Annls Soc. ent. Fr. **3**: 139.

Type Locality: Europe (Pathania *et al.,* 2020).

Material examined: INDIA: Himachal Pradesh: Palampur (32° 6' 37.9512" N, 76° 32' 10.4064" E, 1290m), 1♂, 10.viii.2018, Light trap coll. Santhosh; INDIA: Himachal Pradesh: Nauni (30.8625118°N, 77.1679151°E, 1300m), 2♂, 9.x.2018, Light trap coll. Santhosh.

Description: Well developed ocelli. Light yellowish brown rough scales on vertex and apex of frons. Labial palpi medium, porrect, covered by pale brown colored scales. Antennae long, filiform furnished with light brown scales and covered with short cilia.

Thorax: Thorax yellowish brown. Three pairs of legs clothed with pale grayish scales. Legs whitish, outer side of tarsi of foreleg, midleg and outer spur of midleg dark brown.

Wings: Forewing costal margin slightly convex having 17–20 mm wingspan in male. Male forewing with ground color pale brown, basal fascia covered with pale yellow scales, bordered with grayish scales. Subbasal interfascia and subbasal fascia without any markings. Median fascia comprised a band of dark brown scales running obliquely from coastal margin to the tornus bordered by light yellow line on both sides. Termen oblique and yellowish white. Subapical spot on costa formed by dark brown scales, extended below by 3-4 dark brown vertically oblique lines. In forewing all veins separate. R1 arises from middle of the discal cell. R1, R2, R3, R4 and R5 parallel to each other, Chorda weakly developed, R5 and M1 connate basally, M1 and M2 parallel to each other, M3 and CuA1 are arched downward basally and are parallel to each other, CuA2 is arises from basal median discal cell, CuP half the length of 1A+2A, 3A poorly developed.Hindwing 3/4th length clothed by dark gray scales and reaming portion i.e. apical margin light brown.Hindwing Sc + R1 fused, Rs and M1 joined basally diverge toward apex, M2, M3 and M4 connate basally, M2 and M3 subparallel to each other. *Abdomen:* Clothed with light brown scales and anal tuft grey-brown

Male genitalia: Tegumen broad. Uncus strong, distinctly broadened at middle, tapering terminally and rounded apically. Socius small. Gnathos well developed, arm of gnathos strongly sclerotized, rounded apically and triangular at the base. Valva oblong, hairy, terminal portion with lobe. Sacculus narrow, slightly convex near base. Median part of labis broad and spined, terminal portion slender. Juxta is well developed, broad base and bilobed apically. Aedeagus thin, curved, basally rounded, with bunch of cornuti in vesica.

Distribution: India (Himachal Pradesh, Jammu & Kashmir). *Elsewhere:* China, Mongolia, Korea, Japan, Nepal, Afghanistan, Siberia and Europe (Pathania *et al.,* 2020).

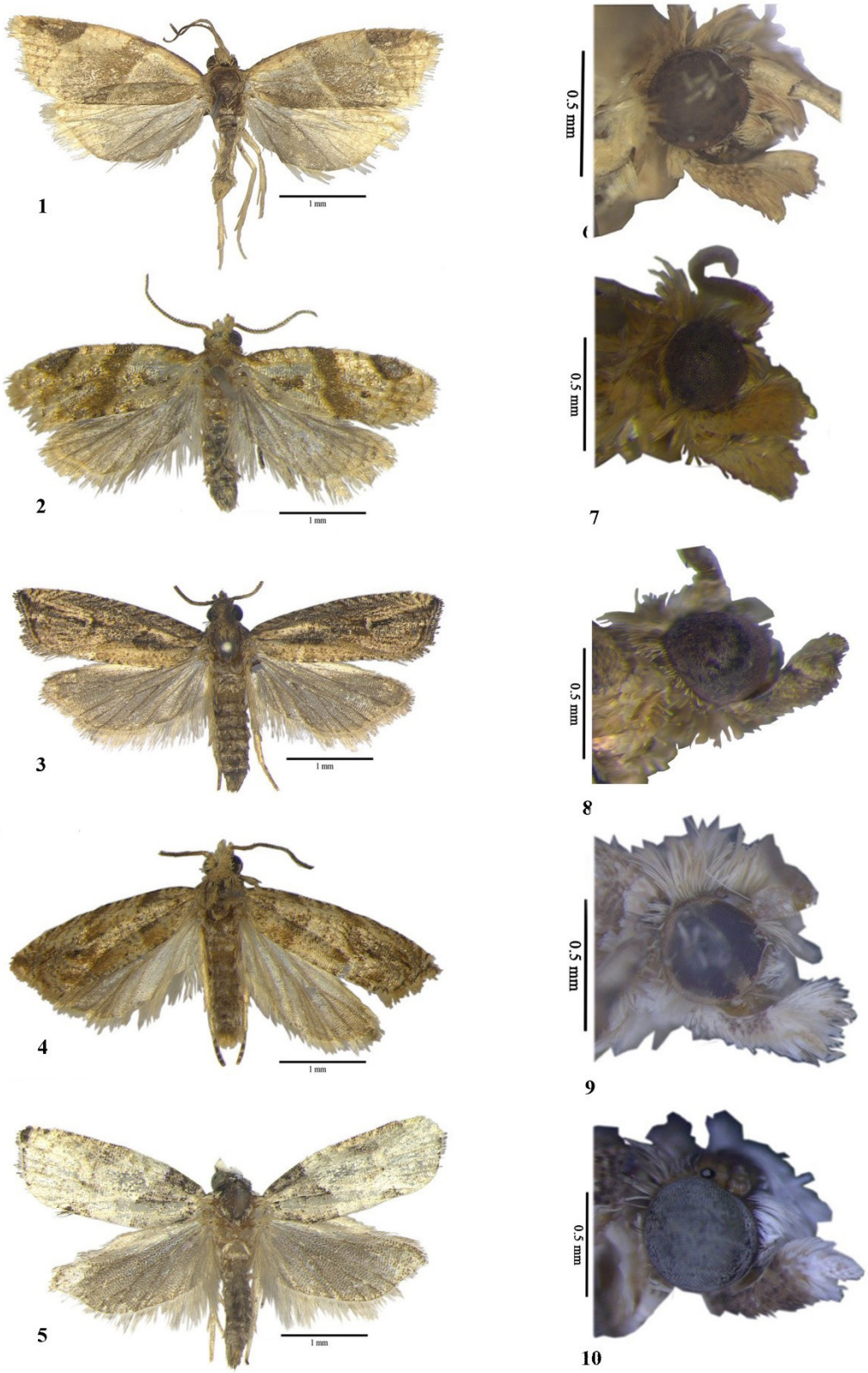
Remarks: The species *Clepsis rurinana* (Linnaeus, 1758) is closely similar to *Clepsis laetornata* (Li & Wang, 2003), but distinguished in the male genitalia by narrow uncus with triangular apex (uncus is broad and socii well developed in *C. laetornata*). Subrectangular, slender valva in *C. rurinana* but relatively broader in *C. laetornata*. Sclerotized broad aedeagus, with lateral subterminal denticle in *C. rurinana* while aedeagus much shorter and slender, without any lateral subterminal denticle in *C. laetornata*. Li and Wang (2003) reviewed genus Clepsis and related species from China. Ganai and Khan (2018) also discussed on this species from Jammu and Kashmir.

Genus ***Lumaria*** Diakon off, 1976

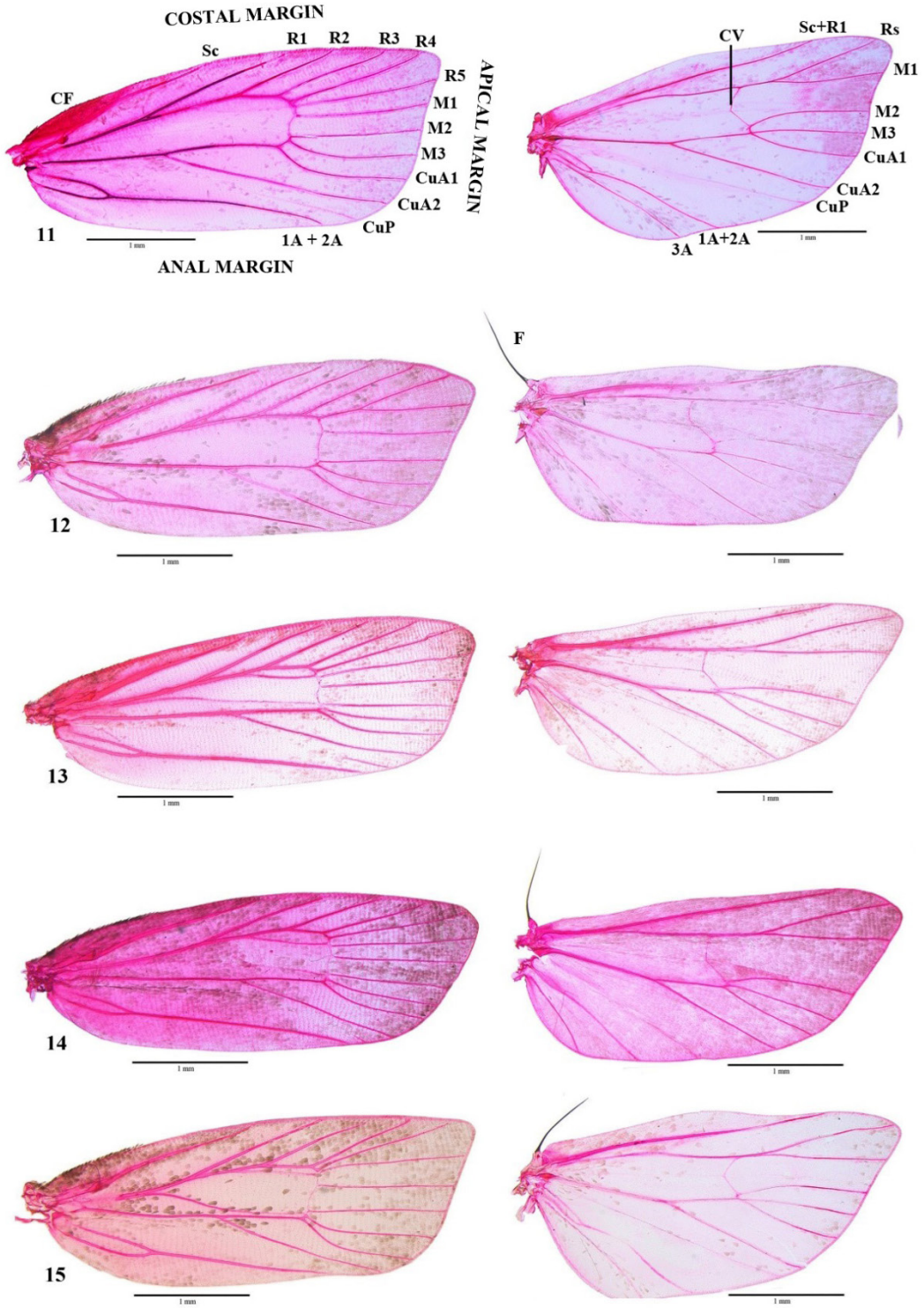
1976. *Zool. Verh. Leiden* **144**: 110.

Lumaria probolias (Meyrick, 1907)
(Figures 2, 7, 12, 17)

1922. *Lumaria exalbescens* Meyrick, (*Capua*), Zool. Meded. **7**: 81.
Type Locality: India, Palni Hills, Travancore, Co-



Figures 1–10. Adults and labial palp. Adults: **1.** *Clepsis rurinana* Linnaeus, 1758, male; **2.** *Lumaria probolias* (Meyrick, 1907), male; **3.** *Bactra venosana* (Zeller, 1847), male; **4.** *Bactra furfurana* (Haworth, 1811), male; **5.** *Gibberifera obscura* (Diakonoff, 1964), male. Labial palpi, **6.** *C. rurinana;* **7.** *L. probolias;* **8.** *B. venosana;* **9.** *B. furfurana;* **10.** *G. obscura*



Figures 11–15. Forewing and hind wing venation: **11.** *Clepsis rurinana* Linnaeus, 1758, male; **12.** *Lumaria probolias* (Meyrick, 1907), male; **13.** *Bactra venosana* (Zeller, 1847), male; **14.** *Bactra furfurana* (Haworth, 1811), male; **15.** *Gibberifera obscura* (Diakonoff, 1964), male.

org (*probolias*); Indonesia, Java, Tegal (*exalbescens*) (Pathania *et al.,* 2020).

Material examined: INDIA: Himachal Pradesh: Berthin (31.4188° N, 76.6427° E, 300m), 1♂ and 1♀, 21.ix.2018, Light trap coll. Santhosh.

Description: Ocellus well developed. Vertex and apex of the frons with anteriorly projected light yellow scales. Rest of frontal region covered with small appressed, upwardly projected, pale yellow scales. Labial palpi small, covered with loose pale yellow scales; second segment bigger than rest of two, terminal segment small. Antenna thread like filiform, clothed with light yellowish brown scales.

Thorax: Covered with pale brown scales, three pairs of legs clothed with pale brown scales

Wings: Wing span 9 mm. Forewing not expanding posteriorly, fairly broad, costa weakly convex, termen rather straight, weakly oblique; costal fold absent. Ground color creamy suffused pale ochreous fromanal regionto termen, strigulated and dotted brown especially along dorsum, black-brown spot at end of median cell. Dorso-basal blotch elongate, brown; median fascia ochreous brownish; subapical blotch brownish. Cilia concolorous with ground color. Subcosta reached to the median of costal margin. R1 arises from 1/3 discal cell. R1, R2 and R3 parallel to each other. R4 and R5 stalked. R5 and M1 parallel to each other. M2 and M3 connate basally. CuA1 arises from the apex of discal cell. CuA2 arises from ¾ discal cell. CuP absent. 1A+ 2A present. 3A absent. Hindwing pale brownish grey, paler basally; cilia white-grey.Hindwing Rs and M1 are stalked and CuP present.

Abdomen: Clothed with pale yellow and brown scales.

Male genitalia: Uncus expanded and slender in distal half, broad apex. Gnathos rather long, valva tapered terminally; costal margin highly convex. Socii reduced. Sacculus slender with several thorns in distal half and group of long hairs ventromedially.Aedeagus slender, curved, with long dorsal slit, cornuti absent.

Distribution: India (Himachal Pradesh, Tamil Nadu, Karnataka). *Elsewhere:* Indonesia (Java), Sri Lanka and Vietnam (Pathania *et al.,* 2020)

Remarks: Lumaria probolias is closely similar to *Lumaria petrophora* (Meyrick, 1938) but is distinct by dark yellowish brown while *L. petrophora* is pale yellowish. Broader, subtriangular forewing with narrow median dark band in *L. probolias* compared to broad band in *L. petrophora*. The costal spot on *L. Probolias* of forewing is smaller than that of *L. petrophora.* In male genitalia of *L. probolias*, apex of tegumen strongly curved and highly sclerotized with narrow gnathos. Sacculus is medium, slender throughout the length with highly sclerotized bristles and aedeagus is weakly curved in *L. probolias* compared to *L. petrophora.* Razowski and his co-workers (2010) studied and discussed different *Lumaria* species.

Subfamily OLETHREUTINAE
Tribe **Bactrini**

Genus ***Bactra*** Stephens, 1834

1834. *Illust. Br. Ent. (Haustellata)* **4**: 124.

Bactra venosana (Zeller, 1847)
(Figures 3, 8, 13, 18)

1960. *Bactra banosii* Gozmany, *Ann. Hist. Nat. Mus. natn. Hung.* **52**: 416.

1931. *Bactra geraropa* Meyrick, *Exotic Microlepid.* **4**: 147.

1900. *Bactra punctistrigana* Mabille, *Annls Soc. ent. Fr.* **68**(1899): 751.

1911. *Bactra scythropa* Meyrick, *Proc. Linn. Soc. N. S. W.* **36**: 254.

1909. *Bactra truculenta* Meyrick, *J. Bombay Nat. Hist. Soc.* **19**: 586.

Type Locality: USA, New York, Syracuse (*venosana*); India, North Coorg, Dibidi (*truculenta*) (Pathania *et al.,* 2020).

Material examined: INDIA: Himachal Pradesh: Berthin (31.4188° N, 76.6427° E, 300m), 3 ♂, 21.ix.2018, Light trap coll. Santhosh; INDIA: Himachal Pradesh: Palampur (32° 6' 37.9512" N, 76° 32' 10.4064" E, 1290m), 2 ♂, 10.viii.2018, Light trap coll. Santhosh.

Description: Ocellus present well developed. Cheatosemata present, region of vertex and anterior part of frons covered with a group of long upward and slightly anteriorly projecting scales are present which are creamy white to light black in color, apex of the each scales are bilobed. A pair of well-developed labial palpi moderately long, porrect, grayish and interspersed with amber white colored scales. Three segmented labial palpi, basal segment ½ the length of second segment, second segment narrower at the base and gradually broader at the apex with outward projected scales and apical segment is ¼ the length of the second segment. Maxillary palpi is very minute, 2 or 3 segmented, small lateral bristles and whitish scales present. Proboscis short and ½ length of labial palpi but longer than maxillary palpus. Antenna, filiform and covered with forward projected small amber

colored scales and minute cilia. Basal segment of antenna bigger in diameter than the rest of segments.

Thorax: Without crest, covered with light yellow colored scales.

Wings: Forewing of male long, slender, subrectangular, without costal fold, rounded apex. Wingspan of male 17-18 mm. Costal margin of male forewing with flat grayish scales interspersed with black and cream colored scale; grayish interspersed with orange color scale at the apical margin gives a parallel pattern on the forewing. Forewing subcosta arises from base of discal cell, R1 arises from ½ discal cell, all veins are separate, chorda at the apex of discal cell from which R2, R3, R4 and R5 arises separately, R1, R2, R3, R4, M1 and M2 parallel to each other, M-stem weakly developed, R5 and M1 connate basally, M2, M3 and CuA1 arises from the vicinity of apex of M-stem, connate basally, CuA1 bent downward basally. CuA2 arises from ¾ discal cell, CuP ½ length of 1A+2A. Hindwing dark grayish with fringes present along the margin. Hindwing Rs and M1 stalked, M2, M3 and CuA1 connate basally and arises from base of closing vein, M2 in line with M-stem, CuP well developed, 1A+2A, 3A and CuP present.

Abdomen: Yellowish gray scales covered in both male and female.

Male genitalia: Uncus well developed, short and firm, curved, knob s*et al*ong boundaries with a thick palisade of bristles. Tegumen broad, well sclerotized. Socii lateral membranous lobe, slightly sclerotized. Gnathos is broad and slightly sclerotized. Valva quite elongated and slender, with a clavate cucullus that relatively short, with a broad, obliquely rounded top fringed with flattened pegs. Sacculus broad, with strong apical bristles and a group of short bristles at middle of marginal portion. Juxta stong, triangular, wider laterally. Vinculum broad at the base, wedge-shaped, ventral edge curved with minute teeth. Aedeagus short, robust, bulged at the base and narrower apex.

Distribution: India (Himachal Pradesh (present study), Karnataka, West Bengal, Andaman Islands). *Elsewhere:* Southern Europe, North Africa, Sri Lanka, China, Malaya, Australia, Indonesia, the Philippines, Taiwan, Timor and Hawaii (Pathania *et al.,* 2020).

Remarks: This species feeds on Poaceae plants. *Bactra chariessa* Diakonoff, 1964 and *B. coronate* Diakonoff, 1950 are closer to *B. venosana*. In the male genitalia of *B. Venosana* vinculum with ventral edge irregularly denticulate compared to smooth in *B. coronata*. Tubal analis is reduced in *B. venosana* where as it is rather rigid, puctualate oval plate in *B. chariessa*. Diakonoff (1963) review genus *Bactra* Stephens and provided diagnosis for many species. Horak (2006) also redescribed genus Bactra from Australia and provided genitalia figures for *B. venosana*.

Bactra furfurana (Haworth, 1811)
(Figures 4, 9, 14, 19)

1844. *Bactra acutana* Eversmann, (*Cochylis*), *Fauna Lepid. Volgo-Ural.,* 529.

1995. *Bactra cannisana* Razowski, *Acta zool. cracov.* **38**: 287.

1874. *Bactra canuisana* Milliere, (*Sciaphila*), *Rev. Mag. Zool.* **2**(3): 247.

1928. *Bactra helophaea* Meyrick, *Exotic Microlepid.* **2**: 442.

1959. *Bactra iranica* Diakonoff, (*Bactra longinqua ssp.*), *Bijdr. Dierk.,* **29**: 176.

1962. *Bactra kurentsovi* Diakonoff, (*Bactra furfurana var.*), *Zool. Verh. Leiden,* **59**: 28.

1846. *Bactra lamana* Lienig & Zeller, (*Phoxopteris*), *Isis von Oken (Leipzig),* **1846**(3): 257.

1959. *Bactra longinqua* Diakonoff, *Bijdr. Dierk,* **29**: 174.

1949. *Bactra nigrovittana* Obraztsov, (*Bactra furfurana ab.*), *Mitt. mnch. ent. Ges.* 35-39: 199.

1851. *Bactra scirpana* Herrich-Schaffer, (*Tortrix (Aphelia*), *Syst. Bearbeitung Schmett. Eur.* **4**: 243.

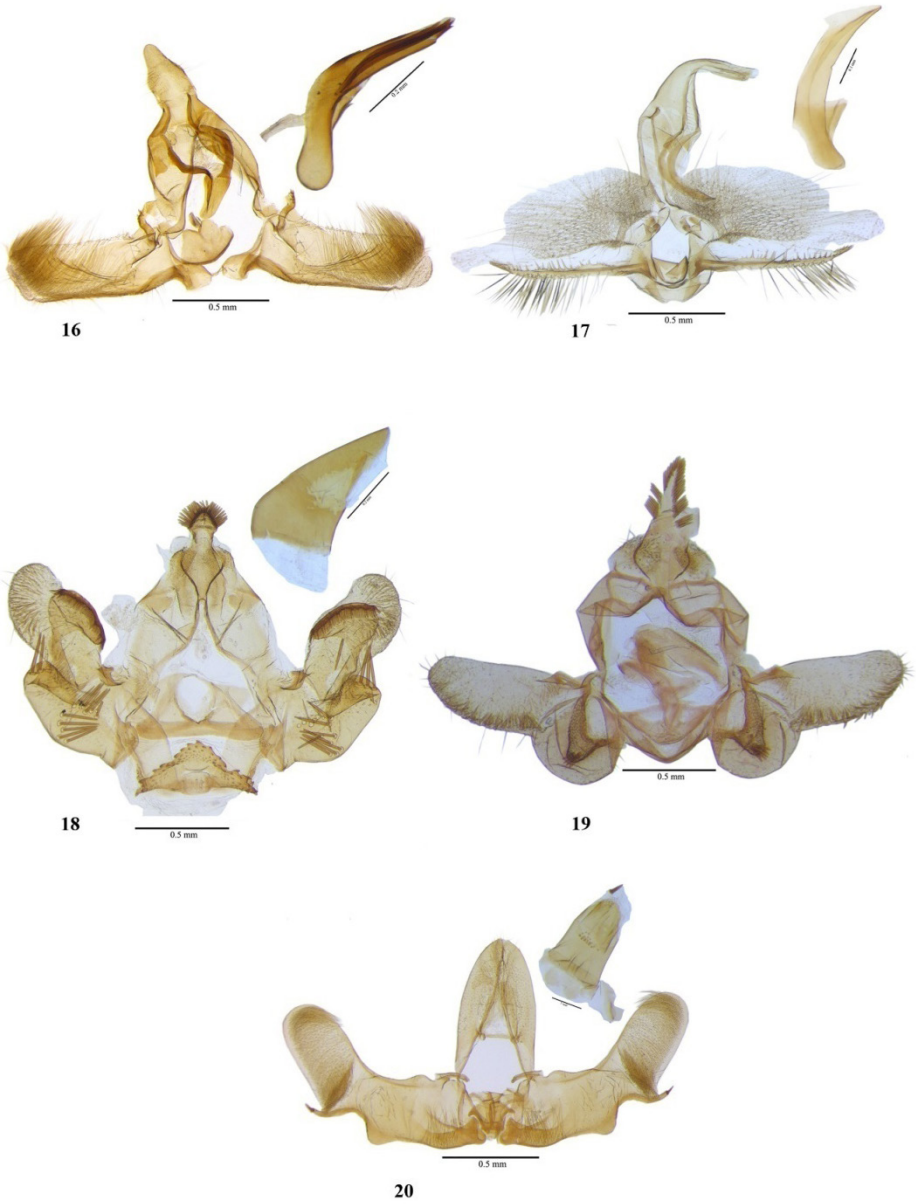
Type Locality: India, Assam, Shillong [now in Meghalaya] (Pathania *et al.,* 2020)

Material examined: INDIA: Himachal Pradesh: Nauni (30.8625118°N, 77.1679151°E, 1300m), 1♂, 13.ix.2018, Light trap coll. Santhosh.

Description: Ocellus well developed. Areas of vertex and apical vertex with light yellow rough scales, anteriorly projected. Three segmented medium sized labial palpi, clothed with light yellow interspersed with dark gray color scales. Second segment of labial palpi narrower at the base and gradually broaden at the apex with roughly projecting scales above and beneath, third segment short and whitish-gray. Proboscis is medium and well developed.

Thorax: Smooth without any crest, covered with light gray scales. Three pairs of thorasic legs covered with dark gray interspersed with light yellow scales at dorsal surface and ventral surface covered by light yellow colored scales.

Wings: wingspan 16-18 mm. Forewings of male subrectangular, brown-ochreous to brown-ferruginous



Figures 16–20. Male genitalia and aedeagus: **16.** *Clepsis rurinana* Linnaeus, 1758; **17.** *Lumaria probolias* (Meyrick, 1907); **18.** *Bactra venosana* (Zeller, 1847); **19.** *Bactra furfurana* (Haworth, 1811); **20.** *Gibberifera obscura* (Diakonoff, 1964)

suffused with black, orange and grey scales form the reticulate markings at basal, subbasal, median and apical fasciae. Forewing acute apex, pale orange brown mixed to varying degrees with dark brown; Costa vaguely strigulated with whitish markings, thinly dotted with brown. Tornus bends towards the apex, but then turns obtusely to run parallel to the termen to reach the tornus. Another fascia from the middle of costa towards the tornus, meeting the above projection on the obtuse turn. Forewing subcosta joined basally, R1 arises from ½ length of discal cell, all veins are separate, R2, R3, R4, R5, M1 and M2 parallel to each other, R3 and R4 connate basally, M2, M3 and CuA1 connate basally, CuA1 bent downward basally, CuA2 arises from ¾ length of discal cell, CuP and 1A+2A present. Chorda at apex of discal cell from which R2, R3, R4 and R5 arises separately, M-stem is not line with M2. Hindwing brown to dark brown, outer cilia paler. Hindwing Sc+R1 nearly straight stalked at the basal

stem of discal cell. Rs and M1 stalked, M2, M3, CuA1 arises from base of closing vein separately.

Abdomen: clothed by pale brown scales.

Male genitalia: Uncus short, slender, tapering apex and broad at base surrounded with small flat sclerotized bristles on lateral borders. Tegumen subrectangular, sclerotized and rounded apically. Gnathos broad. Valva subrectangular with rounded lobe at base. Juxta subtriangular broader apex and rounded base well. Sacculus sclerotized, projected upward, broader medially and narrow base and apex. Vinculum well sclerotized. Aedeagus small, stout, broad base and narrow apex. Saccus well developed.

Distribution: India (Himachal Pradesh, Meghalaya). *Elsewhere:* USA, UK, Japan and Taiwan (Pathania *et al.*, 2020).

Remarks: The closest species of *B. furfurana* are *B. festa* Diakonoff, 1959 and *B. lacteana* Caradja, 1916. *In B. furfurana* forewing is distinctly reticulated beyond medial fascia while sickle shaped pattern in *B. festa*. Uncus and valva are relatively smaller in B. *furfurana* as compared to *B. festa*. In *B. furfurana* there are 5-9 spines at the sacculo-valvar junction while 2-4 spines in *B. lacteana*. The similar characters explained by Horak (2006) and Byun *et al*., (2006).

Tribe **Eucosmini**

Genus ***Gibberifera*** Obraztsov, 1946
1946. *Z. Wien. ent. Ges.* **30**: 35.

Gibberifera obscura Diakonoff, 1964
(Figures 5, 10, 15, 20)

2007. *Hynhamia obscurana* Razowski & Pelz, (*Hynhamia*), *Polskie Pismo Entomol.* **76**: 25.

2008. *Sisurcana obscura* Razowski & Wojtusiak, *Acta Zool. Cracov.* **51B**: 21.

2008. *Deltophalonia obscura* Razowski & Wojtusiak, *Genus*. **19**: 504.

1916. *Aethes obscurana* Caradja, (*Conchylisclathranavar*), *Dt. ent. Z. Iris*. **30**: 53.

1919. *Aethes lucindana* Kennel, 1919 (*Euxanthis*), *Mitt. mnch. ent. Ges.* **8**: 72.

Type Locality: Nepal, Manangbhot (Pathania *et al.,* 2020).

Material examined: INDIA: Himachal Pradesh: Palampur (32° 6' 37.9512" N, 76° 32' 10.4064" E, 1290m), 1♂, 10.viii.2018, Light trapcoll. Santhosh.

Description: Ocellus well developed. Region of vertex and upper part of vertex clothed with pale silver colored rough scales and remaining area covered by small, appressed, light silver colored scales. Labial palpi medium, second segment sinuate, terminal segment porrect, clothed with whitish silver scales at dorsally and pale grayish in ventral and also base of the palpi. Antenna filiform, covered completely by pale silver scales.

Thorax: Smooth, covered with small appressed silver colored scales. Three pairs of legs, clothed with whitish silver colored scales interspersed with grayish black scales at the base of tibial and tarsal segment.

Wings: Small to medium sized moth, having wing length of 5-6 mm. Forewing subrectangular, elongated without costal fold, clothed with silver colored and grayish black scales. At base and middle of forewing comprises few grayish black strigulae. Terminal end of coastal margin with a small group of grayish black scales gives a spotted pattern and it extended as a grayish black line along the apical margin. Forewing with 12 separate veins. Subcostal arises from base of the wing. R3 and R4 approximate towards base, R4 up to costa, R5 up to termen, R4 and R5 connate basally. R5, M1 and M2 parallel to each other, M3 and CuA1 bent downward, CuP reduced in forewing, discal cell with stem of R4+R5 (chorda) and M stem distinct. A small narrow accessory cell at the apex of discal cell. M-stem run longitudinally and divide discal into two halves. Hindwing clothed with whitish scales at the costal margin and rest covered by brown scales. Hindwing RS and M1 approximate, M3 and CuA1 stalked, CuP rudimentary.

Abdomen: Slender, covered with silvery brown scales.

Male genitalia: Tegumen broad, subtriangular, with rounded shoulders. Gnathos weakly sclerotized. Vinculum reduced. Valva long and broad with constricted distinct neck with a prominent median well sclerotized spine. Sacculus setose. Juxta small and well developed. Cone shaped aedeagus, short with several deciduous cornuti.

Distribution: India (Himachal Pradesh (present study); Jammu & Kashmir). *Elsewhere:* Nepal and Pakistan (Pathania *et al.,* 2020).

Remarks: This species closely similar to *Gibberifera glaciata,* Meyrick 1907. *G. obscura* forewing is completely light silver while *G. glaciata* forewing is dark white ground with dark brownish black band at base, triangular spot at median costal margin interspersed with whitish brown scales, various shaped small black spots all along the apical margin and a triangular spot at anal region.

In *G. obscura* tegument relatively longer and narrow while in *G. glaciate* tegumen is smaller and broad. In *G. obscura* relatively valva is broad, well sclerotized juxta and poorly developed vinculum as compared to *G. glaciata*. In *G. obscura* hindwing is relatively dark grayish while brown and whitish brown in *G. glaciata*. Same species have been recently discussed by Horak (2006) and Ganai and Khan (2018).

Discussion

Till now 39 species of tortricids included in the faunal list of Himachal Pradesh; 5 more species are added from this study (*Clepsis rurinana, Lumaria probolias, Bactra furfurana, B. venosana* and *Gibberifera obscura*). In this study, high quality photographic illustrations including habitus were provided. These species were not been recorded from the respective locations before even though they are known to occur in other parts of the Indian subcontinent. Of the 487 species of Tortricidae recorded from India (Pathania *et al.,* 2020), 10 species from the genus *Clepsis* (Himachal Pradesh, Jammu & Kashmir, Uttarakhand, Sikkim, West Bengal, Meghalaya); 4 species of *Lumaria* (Himachal Pradesh, Jammu & Kashmir, Punjab, Tamil Nadu, Karnataka); 11 species of *Bactra* (Himachal Pradesh, Haryana, Bihar,Meghalaya, Gujarat, Maharashtra, Karnataka, Tamil Nadu, Andaman Islands) and 2 species of *Gibberifera* (Himachal Pradesh, Meghalaya, Uttarakhand) are recorded from specific locations. Apparently, these species have wider geographic range, which is not limited only to the lower altitude of Indian subcontinent they can also occur in the higher altitude i.e., more than 1200m. Till now, there is no published data to explain about the known species of Tortricidae from Himachal Pradesh. There is a need to conduct location specific faunistic studies on this group.

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